



Sequence Listing

<110> Hoffmann-La Roche, Karoly
McFarland, Keith C.
Segaloff, Deborah L.
Seuberg, Peter H.

<120> Glycoprotein Hormone Receptor Molecules

<130> P0576P1C3

<140> US 10/755,190
<141> 2004-01-09

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<151> 2001-06-07

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<151> 1994-03-07

<150> US 07/781,153
<151> 1991-10-31

<150> PCT/US90/02488
<151> 1990-05-04

<150> US 07/347,683
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Gly Arg Arg Val Pro Ala Leu Arg Gln Leu Leu Val Leu
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gca gtg ctg ctg ctg aag cct tca cag ctg cag tcc cga 124
Ala Val Leu Leu Lys Pro Ser Gln Leu Gln Ser Arg
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gag ctg tca ggg tcg cgc tgc ccc gag ccc tgc gac tgc 163
Glu Leu Ser Gly Ser Arg Cys Pro Glu Pro Cys Asp Cys
30 35 40

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Ala Pro Asp Gly Ala Leu Arg Cys Pro Gly Pro Arg Ala
45 50

ggc ctc gcc aga cta tct ctc acc tat ctc cct gtc aaa 241
Gly Leu Ala Arg Leu Ser Leu Thr Tyr Leu Pro Val Lys
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Thr	Leu	Pro	Ser	Lys	Glu	Lys	Phe	Thr	Ser	Leu	Leu	Val
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gcc	acg	ctg	acc	tac	ccc	agc	cac	tgc	tgc	gcc	ttc	agg
Ala	Thr	Leu	Thr	Tyr	Pro	Ser	His	Cys	Cys	Ala	Phe	Arg
275												285
aat	ttg	ccg	aag	aaa	gaa	cag	aat	ttt	tca	ttt	tcc	att
Asn	Leu	Pro	Lys	Lys	Glu	Gln	Asn	Phe	Ser	Phe	Ser	Ile
290							295					300
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Phe	Glu	Asn	Phe	Ser	Lys	Gln	Cys	Glu	Ser	Thr	Val	Arg
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Lys	Ala	Asp	Asn	Glu	Thr	Leu	Tyr	Ser	Ala	Ile	Phe	Glu
315							320					325
gag	aat	gaa	ctc	agt	ggc	tgg	gat	tat	gat	tat	ggc	ttc
Glu	Asn	Glu	Leu	Ser	Gly	Trp	Asp	Tyr	Asp	Tyr	Gly	Phe
330							335					
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Cys	Ser	Pro	Lys	Thr	Leu	Gln	Cys	Ala	Pro	Glu	Pro	Asp
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Ala	Phe	Asn	Pro	Cys	Glu	Asp	Ile	Met	Gly	Tyr	Ala	Phe
355							360					365
ctt	agg	gtc	ctg	att	tgg	ctg	att	aat	ata	cta	gcc	atc
Leu	Arg	Val	Leu	Ile	Trp	Leu	Ile	Asn	Ile	Leu	Ala	Ile
370								375				
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Phe	Gly	Asn	Leu	Thr	Val	Leu	Phe	Val	Leu	Leu	Thr	Ser
380							385					390
cgt	tat	aaa	ctg	aca	gtg	ccc	cgc	ttc	ctc	atg	tgt	aat
Arg	Tyr	Lys	Leu	Thr	Val	Pro	Arg	Phe	Leu	Met	Cys	Asn
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ctc	tcc	ttt	gca	gac	ttt	tgc	atg	ggg	ctc	tac	ctg	ctg
Leu	Ser	Phe	Ala	Asp	Phe	Cys	Met	Gly	Leu	Tyr	Leu	Leu
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ctc	att	gcc	tcc	gtg	gac	tcc	caa	aca	aaa	ggc	cag	tac
Leu	Ile	Ala	Ser	Val	Asp	Ser	Gln	Thr	Lys	Gly	Gln	Tyr
420							425					430
tat	aac	cac	gcc	ata	gac	tgg	cag	aca	ggg	agt	ggc	tgc
Tyr	Asn	His	Ala	Ile	Asp	Trp	Gln	Thr	Gly	Ser	Gly	Cys
435								440				
ggt	gca	gct	ggc	ttc	ttt	act	gtg	ttt	gcc	agt	gaa	ctc
Gly	Ala	Ala	Gly	Phe	Phe	Thr	Val	Phe	Ala	Ser	Glu	Leu
445							450					455
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Ser	Val	Tyr	Thr	Leu	Thr	Val	Ile	Thr	Leu	Glu	Arg	Trp

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 Arg Leu Arg His Ala Ile Pro Ile Met Leu Gly Gly Trp
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ctc ttt tct acg ctg atc gcc acg atg ccc ctt gtg ggt 1567
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gat gtg gaa tcc act ctg tcc caa gtc tac ata tta tcc 1645
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Ser Asn Cys Lys Asn Gly Phe Pro Gly Ala Ser Lys Pro
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Ser Gln Ala Thr Leu Lys Leu Ser Thr Val His Cys Gln
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cag ccc ata cca ccg aga gcg tta act cac tagcatt 2150
Gln Pro Ile Pro Pro Arg Ala Leu Thr His
695 700

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<212> PRT
<213> Artificial Sequence

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Gly Ser Arg Cys Pro Glu Pro Cys Asp Cys Ala Pro Asp Gly Ala

35	40	45
Leu Arg Cys Pro Gly Pro Arg Ala Gly	Leu Ala Arg Leu Ser	Leu
50	55	60
Thr Tyr Leu Pro Val Lys Val Ile Pro Ser	Gln Ala Phe Arg	Gly
65	70	75
Leu Asn Glu Val Val Lys Ile Glu Ile Ser	Gln Ser Asp Ser	Leu
80	85	90
Glu Arg Ile Glu Ala Asn Ala Phe Asp Asn	Leu Leu Asn Leu	Ser
95	100	105
Glu Leu Leu Ile Gln Asn Thr Lys Asn	Leu Leu Tyr Ile Glu	Pro
110	115	120
Gly Ala Phe Thr Asn Leu Pro Arg Leu Lys	Tyr Leu Ser Ile	Cys
125	130	135
Asn Thr Gly Ile Arg Thr Leu Pro Asp Val	Thr Lys Ile Ser	Ser
140	145	150
Ser Glu Phe Asn Phe Ile Leu Glu Ile Cys	Asp Asn Leu His	Ile
155	160	165
Thr Thr Ile Pro Gly Asn Ala Phe Gln	Gly Met Asn Asn Glu	Ser
170	175	180
Val Thr Leu Lys Leu Tyr Gly Asn Gly	Phe Glu Glu Val Gln	Ser
185	190	195
His Ala Phe Asn Gly Thr Thr Leu Ile Ser	Leu Glu Leu Lys	Glu
200	205	210
Asn Ile Tyr Leu Glu Lys Met His Ser	Gly Ala Phe Gln	Gly Ala
215	220	225
Thr Gly Pro Ser Ile Leu Asp Ile Ser	Ser Thr Lys Leu Gln	Ala
230	235	240
Leu Pro Ser His Gly Leu Glu Ser Ile Gln	Thr Leu Ile Ala	Leu
245	250	255
Ser Ser Tyr Ser Leu Lys Thr Leu Pro Ser	Lys Glu Lys Phe	Thr
260	265	270
Ser Leu Leu Val Ala Thr Leu Thr Tyr	Pro Ser His Cys	Cys Ala
275	280	285
Phe Arg Asn Leu Pro Lys Lys Glu Gln Asn	Phe Ser Phe Ser	Ile
290	295	300
Phe Glu Asn Phe Ser Lys Gln Cys Glu	Ser Thr Val Arg	Lys Ala
305	310	315
Asp Asn Glu Thr Leu Tyr Ser Ala Ile Phe	Glu Glu Asn Glu	Leu
320	325	330
Ser Gly Trp Asp Tyr Asp Tyr Gly Phe	Cys Ser Pro Lys	Thr Leu
335	340	345

Gln Cys Ala Pro Glu Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile
 350 355 360

 Met Gly Tyr Ala Phe Leu Arg Val Leu Ile Trp Leu Ile Asn Ile
 365 370 375

 Leu Ala Ile Phe Gly Asn Leu Thr Val Leu Phe Val Leu Leu Thr
 380 385 390

 Ser Arg Tyr Lys Leu Thr Val Pro Arg Phe Leu Met Cys Asn Leu
 395 400 405

 Ser Phe Ala Asp Phe Cys Met Gly Leu Tyr Leu Leu Leu Ile Ala
 410 415 420

 Ser Val Asp Ser Gln Thr Lys Gly Gln Tyr Tyr Asn His Ala Ile
 425 430 435

 Asp Trp Gln Thr Gly Ser Gly Cys Gly Ala Ala Gly Phe Phe Thr
 440 445 450

 Val Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Val Ile Thr
 455 460 465

 Leu Glu Arg Trp His Thr Ile Thr Tyr Ala Val Gln Leu Asp Gln
 470 475 480

 Lys Leu Arg Leu Arg His Ala Ile Pro Ile Met Leu Gly Gly Trp
 485 490 495

 Leu Phe Ser Thr Leu Ile Ala Thr Met Pro Leu Val Gly Ile Ser
 500 505 510

 Asn Tyr Met Lys Val Ser Ile Cys Leu Pro Met Asp Val Glu Ser
 515 520 525

 Thr Leu Ser Gln Val Tyr Ile Leu Ser Ile Leu Ile Leu Asn Val
 530 535 540

 Val Ala Phe Val Val Ile Cys Ala Cys Tyr Ile Arg Ile Tyr Phe
 545 550 555

 Ala Val Gln Asn Pro Glu Leu Thr Ala Pro Asn Lys Asp Thr Lys
 560 565 570

 Ile Ala Lys Lys Met Ala Ile Leu Ile Phe Thr Asp Phe Thr Cys
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 590 595 600

 Pro Leu Ile Thr Val Thr Asn Ser Lys Ile Leu Leu Val Leu Phe
 605 610 615

 Tyr Pro Val Asn Ser Cys Ala Asn Pro Phe Leu Tyr Ala Ile Phe
 620 625 630

 Thr Lys Ala Phe Gln Arg Asp Phe Leu Leu Leu Ser Arg Phe
 635 640 645

Gly Cys Cys Lys Arg Arg Ala Glu Leu Tyr Arg Arg Lys Glu Phe
 650 655 660
 Ser Ala Tyr Thr Ser Asn Cys Lys Asn Gly Phe Pro Gly Ala Ser
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 680 685 690
 Gln Pro Ile Pro Pro Arg Ala Leu Thr His
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 35 40 45
 Ala Phe Arg Gly Leu Asn Glu Val Val Lys Ile Glu Ile Ser Gln
 50 55 60
 Ser Asp Ser Leu Glu Arg Ile Glu Ala Asn Ala Phe Asp Asn Leu
 65 70 75
 Leu Asn Leu Ser Glu Leu Leu Ile Gln Asn Thr Lys Asn Leu Leu
 80 85 90
 Tyr Ile Glu Pro Gly Ala Phe Thr Asn Leu Pro Arg Leu Lys Tyr
 95 100 105
 Leu Ser Ile Cys Asn Thr Gly Ile Arg Thr Leu Pro Asp Val Thr
 110 115 120
 Lys Ile Ser Ser Ser Glu Phe Asn Phe Ile Leu Glu Ile Cys Asp
 125 130 135
 Asn Leu His Ile Thr Thr Ile Pro Gly Asn Ala Phe Gln Gly Met
 140 145 150
 Asn Asn Glu Ser Val Thr Leu Lys Leu Tyr Gly Asn Gly Phe Glu
 155 160 165
 Glu Val Gln Ser His Ala Phe Asn Gly Thr Thr Leu Ile Ser Leu
 170 175 180
 Glu Leu Lys Glu Asn Ile Tyr Leu Glu Lys Met His Ser Gly Ala
 185 190 195
 Phe Gln Gly Ala Thr Gly Pro Ser Ile Leu Asp Ile Ser Ser Thr

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Leu Ile Ala Leu Ser Ser Tyr Ser Leu	Lys Thr Leu Pro Ser Lys	
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Glu Lys Phe Thr Ser Leu Leu Val Ala	Thr Leu Thr Tyr Pro Ser	
245	250	255
His Cys Cys Ala Phe Arg Asn Leu Pro	Lys Lys Glu Gln Asn Phe	
260	265	270
Ser Phe Ser Ile Phe Glu Asn Phe Ser	Lys Gln Cys Glu Ser Thr	
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Val Arg Lys Ala Asp Asn Glu Thr Leu	Tyr Ser Ala Ile Phe Glu	
290	295	300
Glu Asn Glu Leu Ser Gly Trp Asp Tyr Asp	Tyr Gly Phe Cys Ser	
305	310	315
Pro Lys Thr Leu Gln Cys Ala Pro Glu	Pro Asp Ala Phe Asn Pro	
320	325	330
Cys Glu Asp Ile Met Gly Tyr Ala Phe	Leu Arg Val Leu Ile Trp	
335	340	345
Leu Ile Asn Ile Leu Ala Ile Phe Gly	Asn Leu Thr Val Leu Phe	
350	355	360
Val Leu Leu Thr Ser Arg Tyr Lys Leu	Thr Val Pro Arg Phe Leu	
365	370	375
Met Cys Asn Leu Ser Phe Ala Asp Phe	Cys Met Gly Leu Tyr Leu	
380	385	390
Leu Leu Ile Ala Ser Val Asp Ser Gln	Thr Lys Gly Gln Tyr Tyr	
395	400	405
Asn His Ala Ile Asp Trp Gln Thr Gly	Ser Gly Cys Gly Ala Ala	
410	415	420
Gly Phe Phe Thr Val Phe Ala Ser Glu	Leu Ser Val Tyr Thr Leu	
425	430	435
Thr Val Ile Thr Leu Glu Arg Trp His	Thr Ile Thr Tyr Ala Val	
440	445	450
Gln Leu Asp Gln Lys Leu Arg Leu Arg	His Ala Ile Pro Ile Met	
455	460	465
Leu Gly Gly Trp Leu Phe Ser Thr Leu	Ile Ala Thr Met Pro Leu	
470	475	480
Val Gly Ile Ser Asn Tyr Met Lys Val	Ser Ile Cys Leu Pro Met	
485	490	495
Asp Val Glu Ser Thr Leu Ser Gln Val	Tyr Ile Leu Ser Ile Leu	
500	505	510

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Arg	Ile	Tyr	Phe	Ala	Val	Gln	Asn	Pro	Glu	Leu	Thr	Ala	Pro	Asn
			530					535						540
Lys	Asp	Thr	Lys	Ile	Ala	Lys	Lys	Met	Ala	Ile	Leu	Ile	Phe	Thr
			545					550						555
Asp	Phe	Thr	Cys	Met	Ala	Pro	Ile	Ser	Phe	Phe	Ala	Ile	Ser	Ala
			560					565						570
Ala	Phe	Lys	Val	Pro	Leu	Ile	Thr	Val	Thr	Asn	Ser	Lys	Ile	Leu
			575					580						585
Leu	Val	Leu	Phe	Tyr	Pro	Val	Asn	Ser	Cys	Ala	Asn	Pro	Phe	Leu
			590					595						600
Tyr	Ala	Ile	Phe	Thr	Lys	Ala	Phe	Gln	Arg	Asp	Phe	Leu	Leu	Leu
			605					610						615
Leu	Ser	Arg	Phe	Gly	Cys	Cys	Lys	Arg	Arg	Ala	Glu	Leu	Tyr	Arg
			620					625						630
Arg	Lys	Glu	Phe	Ser	Ala	Tyr	Thr	Ser	Asn	Cys	Lys	Asn	Gly	Phe
			635					640						645
Pro	Gly	Ala	Ser	Lys	Pro	Ser	Gln	Ala	Thr	Leu	Lys	Leu	Ser	Thr
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Val	His	Cys	Gln	Gln	Pro	Ile	Pro	Pro	Arg	Ala	Leu	Thr	His	
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<212> PRT
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<220>
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				20					25					30
Arg	Leu	Ser	Leu	Thr	Tyr	Leu	Pro	Val	Lys	Val	Ile	Pro	Ser	Gln
				35					40					45
Ala	Phe	Arg	Gly	Leu	Asn	Glu	Val	Val	Lys	Ile	Glu	Ile	Ser	Gln
				50					55					60
Ser	Asp	Ser	Leu	Glu	Arg	Ile	Glu	Ala	Asn	Ala	Phe	Asp	Asn	Leu
				65					70					75
Leu	Asn	Leu	Ser	Glu	Leu	Leu	Ile	Gln	Asn	Thr	Lys	Asn	Leu	Leu
				80					85					90

Tyr Ile Glu Pro Gly Ala Phe Thr Asn Leu Pro Arg Leu Lys Tyr
 95 100 105
 Leu Ser Ile Cys Asn Thr Gly Ile Arg Thr Leu Pro Asp Val Thr
 110 115 120
 Lys Ile Ser Ser Ser Glu Phe Asn Phe Ile Leu Glu Ile Cys Asp
 125 130 135
 Asn Leu His Ile Thr Thr Ile Pro Gly Asn Ala Phe Gln Gly Met
 140 145 150
 Asn Asn Glu Ser Val Thr Leu Lys Leu Tyr Gly Asn Gly Phe Glu
 155 160 165
 Glu Val Gln Ser His Ala Phe Asn Gly Thr Thr Leu Ile Ser Leu
 170 175 180
 Glu Leu Lys Glu Asn Ile Tyr Leu Glu Lys Met His Ser Gly Ala
 185 190 195
 Phe Gln Gly Ala Thr Gly Pro Ser Ile Leu Asp Ile Ser Ser Thr
 200 205 210
 Lys Leu Gln Ala Leu Pro Ser His Gly Leu Glu Ser Ile Gln Thr
 215 220 225
 Leu Ile Ala Leu Ser Ser Tyr Ser Leu Lys Thr Leu Pro Ser Lys
 230 235 240
 Glu Lys Phe Thr Ser Leu Leu Val Ala Thr Leu Thr Tyr Pro Ser
 245 250 255
 His Cys Cys Ala Phe Arg Asn Leu Pro Lys Lys Glu Gln Asn Phe
 260 265 270
 Ser Phe Ser Ile Phe Glu Asn Phe Ser Lys Gln Cys Glu Ser Thr
 275 280 285
 Val Arg Lys Ala Asp Asn Glu Thr Leu Tyr Ser Ala Ile Phe Glu
 290 295 300
 Glu Asn Glu Leu Ser Gly Trp Asp Tyr Asp Tyr Gly Phe Cys Ser
 305 310 315
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 <213> Rattus

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 Met Ala Leu Leu Val Ser

tgg ctg gca ttc ttg ggc acg gga tct gga tgt cat cac 130
 Leu Leu Ala Phe Leu Gly Thr Gly Ser Gly Cys His His
 10 15 20

tgg ctg tgt cat tgc tct aat agg gtc ttt ctc tgc caa 169
 Trp Leu Cys His Cys Ser Asn Arg Val Phe Leu Cys Gln
 25 30

gac agc aag gtg aca gag att ccg acc gac ctc ccc cgg 208
 Asp Ser Lys Val Thr Glu Ile Pro Thr Asp Leu Pro Arg
 35 40 45

aac gcc att gaa ctg agg ttt gtg ctc acc aag ctt cga 247
 Asn Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg
 50 55

gtc atc ccg aaa gga tca ttt gct gga ttt gga gac ctg 286
 Val Ile Pro Lys Gly Ser Phe Ala Gly Phe Gly Asp Leu
 60 65 70

gag aaa ata gag atc tct cag aat gat gtc ttg gaa gta 325
 Glu Lys Ile Glu Ile Ser Gln Asn Asp Val Leu Glu Val
 75 80 85

ata gag gca gat gtg ttc tcc aac cta ccc aag ttg cat 364
 Ile Glu Ala Asp Val Phe Ser Asn Leu Pro Lys Leu His
 90 95

gaa att agg att gaa aag gcc aac aat ctt ctg tac atc 403
 Glu Ile Arg Ile Glu Lys Ala Asn Asn Leu Leu Tyr Ile
 100 105 110

aac ccg gag gcc ttc cag aat ctc ccc agt ctc aga tat 442
 Asn Pro Glu Ala Phe Gln Asn Leu Pro Ser Leu Arg Tyr
 115 120

ctg tta ata tcc aac aca ggc att aag cac ttg cca gct 481
 Leu Leu Ile Ser Asn Thr Gly Ile Lys His Leu Pro Ala
 125 130 135

gtt cac aag atc cag tct ctccaa aag gtt cta cta gac 520
 Val His Lys Ile Gln Ser Leu Gln Lys Val Leu Leu Asp
 140 145 150

att caa gat aac ata aac atc cac atc gtt gcc agg aac 559
 Ile Gln Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn
 155 160

tcc ttc atg gga ctg agt ttt gaa agt gtg att tta tgg 598
 Ser Phe Met Gly Leu Ser Phe Glu Ser Val Ile Leu Trp
 165 170 175

ctg agt aag aat ggg att gaa gaa ata cac aac tgt gca 637
 Leu Ser Lys Asn Gly Ile Glu Glu Ile His Asn Cys Ala
 180 185

tcc aac gga act cag cta gat gaa ctg aat cta agc gat 676
 Phe Asn Gly Thr Gln Leu Asp Glu Leu Asn Leu Ser Asp
 190 195 200

aac aat aat ttg gaa gaa ttg cct aat gac gtt ttc cag 715
 Asn Asn Asn Leu Glu Glu Leu Pro Asn Asp Val Phe Gln
 205 210 215

 gga gcc tct ggg cca gtc att tta gat atc tca agg aca 754
 Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg Thr
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 aag gtc cat tcc tta cca aac cat ggc tta gaa aat ctg 793
 Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu
 230 235 240

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 Lys Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys
 245 250

 ctc cct aat ctg gac aag ttt gtc acc ctc atg gag gcc 871
 Leu Pro Asn Leu Asp Lys Phe Val Thr Leu Met Glu Ala
 255 260 265

 agc ctc acc tac ccc agc cac tgc tgt gct ttt gca aac 910
 Ser Leu Thr Tyr Pro Ser His Cys Cys Ala Phe Ala Asn
 270 275 280

 ttg aag cgg caa atc tct gaa ctt cat cca att tgc aac 949
 Leu Lys Arg Gln Ile Ser Glu Leu His Pro Ile Cys Asn
 285 290

 aag tct att tta agg caa gat att gat gat atg act caa 988
 Lys Ser Ile Leu Arg Gln Asp Ile Asp Asp Met Thr Gln
 295 300 305

 att ggg gat cag aga gtc tct ctg ata gat gat gaa ccc 1027
 Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp Glu Pro
 310 315

 agt tat gga aaa gga tct gac atg atg tac aat gaa ttt 1066
 Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe
 320 325 330

 gat tat gac tta tgt aat gaa gtt gtt gat gtg acc tgc 1105
 Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys
 335 340 345

 tca cca aag cca gat gca ttt aat cca tgt gaa gat atc 1144
 Ser Pro Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile
 350 355

 atg ggg tac aac atc ctc agg gtc ttg ata tgg ttt att 1183
 Met Gly Tyr Asn Ile Leu Arg Val Leu Ile Trp Phe Ile
 360 365 370

 agc atc ctg gcc att act ggg aac acc aca gtg ctg gtg 1222
 Ser Ile Leu Ala Ile Thr Gly Asn Thr Thr Val Leu Val
 375 380

 gtc ctg acc aca agc caa tac aaa cta act gtg ccc cg 1261
 Val Leu Thr Thr Ser Gln Tyr Lys Leu Thr Val Pro Arg
 385 390 395

ttt ctt atg tgt aac ctc gcc ttc gct gat ctc tgc ata 1300
 Phe Leu Met Cys Asn Leu Ala Phe Ala Asp Leu Cys Ile
 400 405 410

 ggc atc tac ttg cta ctt ata gca tca gtt gac atc cat 1339
 Gly Ile Tyr Leu Leu Ile Ala Ser Val Asp Ile His
 415 420

 acc aag agc cag tac cac aac tat gcc att gac tgg caa 1378
 Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp Gln
 425 430 435

 aca gga gca ggc tgt gat gct gct ggc ttt ttc act gtc 1417
 Thr Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val
 440 445

 ttt gcc agt gaa ctg tca gtc tac aca ttg aca gcc atc 1456
 Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile
 450 455 460

 acc cta gaa aga tgg cat acc atc aca cat gct atg caa 1495
 Thr Leu Glu Arg Trp His Thr Ile Thr His Ala Met Gln
 465 470 475

 ctg gaa tgc aag gtg cag ctc cgg cat gct gcc agc gtc 1534
 Leu Glu Cys Lys Val Gln Leu Arg His Ala Ala Ser Val
 480 485

 atg gta ttg ggc tgg act ttt gcc ttc gca gct gct ctc 1573
 Met Val Leu Gly Trp Thr Phe Ala Phe Ala Ala Ala Leu
 490 495 500

 ttc ccc atc ttt ggc atc agt agc tac atg aaa gtg agc 1612
 Phe Pro Ile Phe Gly Ile Ser Ser Tyr Met Lys Val Ser
 505 510

 atc tgc ctg ccc atg gat atc gac agc cct ttg tca cag 1651
 Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu Ser Gln
 515 520 525

 ctg tat gtt atg gcc ctc ctt gtc ctc aat gtc ctg gcc 1690
 Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala
 530 535 540

 ttt gtg gtc atc tgt ggc tgc tat acc cac atc tac ctc 1729
 Phe Val Val Ile Cys Gly Cys Tyr Thr His Ile Tyr Leu
 545 550

 aca gtg agg aat cct acc att gtg tcc tca tca agc gac 1768
 Thr Val Arg Asn Pro Thr Ile Val Ser Ser Ser Asp
 555 560 565

 acc aag att gcc aag cgc atg gcc aca ctc atc ttc aca 1807
 Thr Lys Ile Ala Lys Arg Met Ala Thr Leu Ile Phe Thr
 570 575

 gac ttt ctc tgc atg gcc ccc att tca ttc ttt gcc att 1846
 Asp Phe Leu Cys Met Ala Pro Ile Ser Phe Phe Ala Ile
 580 585 590

 tct gcc tcc ctc aag gtg ccg ctc atc act gtg tcc aag 1885

Ser Ala Ser Leu Lys Val Pro Leu Ile Thr Val Ser Lys
 595 600 605
 gcc aag att ctc cta gtt ctg ttc tac ccc atc aat tct 1924
 Ala Lys Ile Leu Leu Val Leu Phe Tyr Pro Ile Asn Ser
 610 615
 tgt gcc aat cct ttc ctc tac gcc att ttc acc aag aac 1963
 Cys Ala Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys Asn
 620 625 630
 ttc cgc agg gac ttc ttc atc ctg ctg agc aag ttt ggc 2002
 Phe Arg Arg Asp Phe Phe Ile Leu Leu Ser Lys Phe Gly
 635 640
 tgt tat gaa atg caa gcc cag att tac agg aca gaa acc 2041
 Cys Tyr Glu Met Gln Ala Gln Ile Tyr Arg Thr Glu Thr
 645 650 655
 tca tcc gct acc cac aac ttc cat gcc cga aag agc cac 2080
 Ser Ser Ala Thr His Asn Phe His Ala Arg Lys Ser His
 660 665 670
 tgc tcc tca gct ccc aga gtc acc aat agt tac gtg ctt 2119
 Cys Ser Ser Ala Pro Arg Val Thr Asn Ser Tyr Val Leu
 675 680
 gtc cct ctt aat cat tca tcc cag aac taaa aatcaatgtg 2160
 Val Pro Leu Asn His Ser Ser Gln Asn
 685 690 692
 aaaatggatc ctcacccattga aagacaatta tgactccttc tgaagagcag 2210
 gccatggact aaatggcaat cctactgcac atctcatcta attaatctc 2260
 tctgggtctc tgcatggcag actgatcagg gaccattaat caccctttg 2310
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 cgccaca 2366
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 Ser Gly Cys His His Trp Leu Cys His Cys Ser Asn Arg Val Phe
 20 25 30
 Leu Cys Gln Asp Ser Lys Val Thr Glu Ile Pro Thr Asp Leu Pro
 35 40 45
 Arg Asn Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg Val
 50 55 60

Ile	Pro	Lys	Gly	Ser	Phe	Ala	Gly	Phe	Gly	Asp	Leu	Glu	Lys	Ile
														65
														70
Glu	Ile	Ser	Gln	Asn	Asp	Val	Leu	Glu	Val	Ile	Glu	Ala	Asp	Val
														80
														85
Phe	Ser	Asn	Leu	Pro	Lys	Leu	His	Glu	Ile	Arg	Ile	Glu	Lys	Ala
														95
														100
Asn	Asn	Leu	Leu	Tyr	Ile	Asn	Pro	Glu	Ala	Phe	Gln	Asn	Leu	Pro
														110
														115
Ser	Leu	Arg	Tyr	Leu	Leu	Ile	Ser	Asn	Thr	Gly	Ile	Lys	His	Leu
														125
														130
Pro	Ala	Val	His	Lys	Ile	Gln	Ser	Leu	Gln	Lys	Val	Leu	Leu	Asp
														140
														145
Ile	Gln	Asp	Asn	Ile	Asn	Ile	His	Ile	Val	Ala	Arg	Asn	Ser	Phe
														155
														160
Met	Gly	Leu	Ser	Phe	Glu	Ser	Val	Ile	Leu	Trp	Leu	Ser	Lys	Asn
														170
														175
Gly	Ile	Glu	Glu	Ile	His	Asn	Cys	Ala	Phe	Asn	Gly	Thr	Gln	Leu
														185
														190
Asp	Glu	Leu	Asn	Leu	Ser	Asp	Asn	Asn	Leu	Glu	Glu	Leu	Pro	
														200
														205
Asn	Asp	Val	Phe	Gln	Gly	Ala	Ser	Gly	Pro	Val	Ile	Leu	Asp	Ile
														215
														220
Ser	Arg	Thr	Lys	Val	His	Ser	Leu	Pro	Asn	His	Gly	Leu	Glu	Asn
														230
														235
Leu	Lys	Lys	Leu	Arg	Ala	Arg	Ser	Thr	Tyr	Arg	Leu	Lys	Lys	Leu
														245
														250
Pro	Asn	Leu	Asp	Lys	Phe	Val	Thr	Leu	Met	Glu	Ala	Ser	Leu	Thr
														260
														265
Tyr	Pro	Ser	His	Cys	Cys	Ala	Phe	Ala	Asn	Leu	Lys	Arg	Gln	Ile
														275
														280
Ser	Glu	Leu	His	Pro	Ile	Cys	Asn	Lys	Ser	Ile	Leu	Arg	Gln	Asp
														290
														295
Ile	Asp	Asp	Met	Thr	Gln	Ile	Gly	Asp	Gln	Arg	Val	Ser	Leu	Ile
														305
														310
Asp	Asp	Glu	Pro	Ser	Tyr	Gly	Lys	Gly	Ser	Asp	Met	Met	Tyr	Asn
														320
														325
Glu	Phe	Asp	Tyr	Asp	Leu	Cys	Asn	Glu	Val	Val	Asp	Val	Thr	Cys
														335
														340
Ser	Pro	Lys	Pro	Asp	Ala	Phe	Asn	Pro	Cys	Glu	Asp	Ile	Met	Gly
														350
														355
														360

Tyr Asn Ile Leu Arg Val Leu Ile Trp Phe Ile Ser Ile Leu Ala
 365 370 375
 Ile Thr Gly Asn Thr Thr Val Leu Val Val Leu Thr Thr Ser Gln
 380 385 390
 Tyr Lys Leu Thr Val Pro Arg Phe Leu Met Cys Asn Leu Ala Phe
 395 400 405
 Ala Asp Leu Cys Ile Gly Ile Tyr Leu Leu Ile Ala Ser Val
 410 415 420
 Asp Ile His Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp
 425 430 435
 Gln Thr Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val Phe
 440 445 450
 Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile Thr Leu Glu
 455 460 465
 Arg Trp His Thr Ile Thr His Ala Met Gln Leu Glu Cys Lys Val
 470 475 480
 Gln Leu Arg His Ala Ala Ser Val Met Val Leu Gly Trp Thr Phe
 485 490 495
 Ala Phe Ala Ala Ala Leu Phe Pro Ile Phe Gly Ile Ser Ser Tyr
 500 505 510
 Met Lys Val Ser Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu
 515 520 525
 Ser Gln Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala
 530 535 540
 Phe Val Val Ile Cys Gly Cys Tyr Thr His Ile Tyr Leu Thr Val
 545 550 555
 Arg Asn Pro Thr Ile Val Ser Ser Ser Asp Thr Lys Ile Ala
 560 565 570
 Lys Arg Met Ala Thr Leu Ile Phe Thr Asp Phe Leu Cys Met Ala
 575 580 585
 Pro Ile Ser Phe Phe Ala Ile Ser Ala Ser Leu Lys Val Pro Leu
 590 595 600
 Ile Thr Val Ser Lys Ala Lys Ile Leu Leu Val Leu Phe Tyr Pro
 605 610 615
 Ile Asn Ser Cys Ala Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys
 620 625 630
 Asn Phe Arg Arg Asp Phe Phe Ile Leu Leu Ser Lys Phe Gly Cys
 635 640 645
 Tyr Glu Met Gln Ala Gln Ile Tyr Arg Thr Glu Thr Ser Ser Ala
 650 655 660
 Thr His Asn Phe His Ala Arg Lys Ser His Cys Ser Ser Ala Pro

	665	670	675
Arg Val Thr Asn Ser Tyr Val Leu Val Pro Leu Asn His Ser Ser			
680	685	690	
Gln Asn			
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Gln Asp Ser Lys Val Thr Glu Ile Pro Thr Asp Leu Pro Arg Asn			
20	25	30	
Ala Ile Glu Leu Arg Phe Val Leu Thr Lys Leu Arg Val Ile Pro			
35	40	45	
Lys Gly Ser Phe Ala Gly Phe Gly Asp Leu Glu Lys Ile Glu Ile			
50	55	60	
Ser Gln Asn Asp Val Leu Glu Val Ile Glu Ala Asp Val Phe Ser			
65	70	75	
Asn Leu Pro Lys Leu His Glu Ile Arg Ile Glu Lys Ala Asn Asn			
80	85	90	
Leu Leu Tyr Ile Asn Pro Glu Ala Phe Gln Asn Leu Pro Ser Leu			
95	100	105	
Arg Tyr Leu Leu Ile Ser Asn Thr Gly Ile Lys His Leu Pro Ala			
110	115	120	
Val His Lys Ile Gln Ser Leu Gln Lys Val Leu Leu Asp Ile Gln			
125	130	135	
Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn Ser Phe Met Gly			
140	145	150	
Leu Ser Phe Glu Ser Val Ile Leu Trp Leu Ser Lys Asn Gly Ile			
155	160	165	
Glu Glu Ile His Asn Cys Ala Phe Asn Gly Thr Gln Leu Asp Glu			
170	175	180	
Leu Asn Leu Ser Asp Asn Asn Asn Leu Glu Glu Leu Pro Asn Asp			
185	190	195	
Val Phe Gln Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg			
200	205	210	
Thr Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu Lys			
215	220	225	

Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys Leu Pro Asn
 230 235 240

 Leu Asp Lys Phe Val Thr Leu Met Glu Ala Ser Leu Thr Tyr Pro
 245 250 255

 Ser His Cys Cys Ala Phe Ala Asn Leu Lys Arg Gln Ile Ser Glu
 260 265 270

 Leu His Pro Ile Cys Asn Lys Ser Ile Leu Arg Gln Asp Ile Asp
 275 280 285

 Asp Met Thr Gln Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp
 290 295 300

 Glu Pro Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe
 305 310 315

 Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys Ser Pro
 320 325 330

 Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile Met Gly Tyr Asn
 335 340 345

 Ile Leu Arg Val Leu Ile Trp Phe Ile Ser Ile Leu Ala Ile Thr
 350 355 360

 Gly Asn Thr Thr Val Leu Val Val Leu Thr Thr Ser Gln Tyr Lys
 365 370 375

 Leu Thr Val Pro Arg Phe Leu Met Cys Asn Leu Ala Phe Ala Asp
 380 385 390

 Leu Cys Ile Gly Ile Tyr Leu Leu Leu Ile Ala Ser Val Asp Ile
 395 400 405

 His Thr Lys Ser Gln Tyr His Asn Tyr Ala Ile Asp Trp Gln Thr
 410 415 420

 Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr Val Phe Ala Ser
 425 430 435

 Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile Thr Leu Glu Arg Trp
 440 445 450

 His Thr Ile Thr His Ala Met Gln Leu Glu Cys Lys Val Gln Leu
 455 460 465

 Arg His Ala Ala Ser Val Met Val Leu Gly Trp Thr Phe Ala Phe
 470 475 480

 Ala Ala Ala Leu Phe Pro Ile Phe Gly Ile Ser Ser Tyr Met Lys
 485 490 495

 Val Ser Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu Ser Gln
 500 505 510

 Leu Tyr Val Met Ala Leu Leu Val Leu Asn Val Leu Ala Phe Val
 515 520 525

Val	Ile	Cys	Gly	Cys	Tyr	Thr	His	Ile	Tyr	Leu	Thr	Val	Arg	Asn
								530		535			540	
Pro	Thr	Ile	Val	Ser	Ser	Ser	Ser	Asp	Thr	Lys	Ile	Ala	Lys	Arg
				545					550				555	
Met	Ala	Thr	Leu	Ile	Phe	Thr	Asp	Phe	Leu	Cys	Met	Ala	Pro	Ile
				560					565				570	
Ser	Phe	Phe	Ala	Ile	Ser	Ala	Ser	Leu	Lys	Val	Pro	Leu	Ile	Thr
				575					580				585	
Val	Ser	Lys	Ala	Lys	Ile	Leu	Leu	Val	Leu	Phe	Tyr	Pro	Ile	Asn
				590					595				600	
Ser	Cys	Ala	Asn	Pro	Phe	Leu	Tyr	Ala	Ile	Phe	Thr	Lys	Asn	Phe
				605					610				615	
Arg	Arg	Asp	Phe	Phe	Ile	Leu	Leu	Ser	Lys	Phe	Gly	Cys	Tyr	Glu
				620					625				630	
Met	Gln	Ala	Gln	Ile	Tyr	Arg	Thr	Glu	Thr	Ser	Ser	Ala	Thr	His
				635					640				645	
Asn	Phe	His	Ala	Arg	Lys	Ser	His	Cys	Ser	Ser	Ala	Pro	Arg	Val
				650					655				660	
Thr	Asn	Ser	Tyr	Val	Leu	Val	Pro	Leu	Asn	His	Ser	Ser	Gln	Asn
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Gln	Asp	Ser	Lys	Val	Thr	Glu	Ile	Pro	Thr	Asp	Leu	Pro	Arg	Asn	
				20				25					30		
Ala	Ile	Glu	Leu	Arg	Phe	Val	Leu	Thr	Lys	Leu	Arg	Val	Ile	Pro	
				35				40					45		
Lys	Gly	Ser	Phe	Ala	Gly	Phe	Gly	Asp	Leu	Glu	Lys	Ile	Glu	Ile	
				50					55				60		
Ser	Gln	Asn	Asp	Val	Leu	Glu	Val	Ile	Glu	Ala	Asp	Val	Phe	Ser	
				65				70					75		
Asn	Leu	Pro	Lys	Leu	His	Glu	Ile	Arg	Ile	Glu	Lys	Ala	Asn	Asn	
				80					85				90		
Leu	Leu	Tyr	Ile	Asn	Pro	Glu	Ala	Phe	Gln	Asn	Leu	Pro	Ser	Leu	
				95					100				105		
Arg	Tyr	Leu	Leu	Ile	Ser	Asn	Thr	Gly	Ile	Lys	His	Leu	Pro	Ala	

110	115	120
Val His Lys Ile Gln Ser Leu Gln Lys Val	Leu Leu Asp Ile Gln	
125	130	135
Asp Asn Ile Asn Ile His Ile Val Ala Arg Asn Ser Phe Met Gly		
140	145	150
Leu Ser Phe Glu Ser Val Ile Leu Trp Leu Ser Lys Asn Gly Ile		
155	160	165
Glu Glu Ile His Asn Cys Ala Phe Asn Gly Thr Gln Leu Asp Glu		
170	175	180
Leu Asn Leu Ser Asp Asn Asn Asn Leu Glu Glu Leu Pro Asn Asp		
185	190	195
Val Phe Gln Gly Ala Ser Gly Pro Val Ile Leu Asp Ile Ser Arg		
200	205	210
Thr Lys Val His Ser Leu Pro Asn His Gly Leu Glu Asn Leu Lys		
215	220	225
Lys Leu Arg Ala Arg Ser Thr Tyr Arg Leu Lys Lys Leu Pro Asn		
230	235	240
Leu Asp Lys Phe Val Thr Leu Met Glu Ala Ser Leu Thr Tyr Pro		
245	250	255
Ser His Cys Cys Ala Phe Ala Asn Leu Lys Arg Gln Ile Ser Glu		
260	265	270
Leu His Pro Ile Cys Asn Lys Ser Ile Leu Arg Gln Asp Ile Asp		
275	280	285
Asp Met Thr Gln Ile Gly Asp Gln Arg Val Ser Leu Ile Asp Asp		
290	295	300
Glu Pro Ser Tyr Gly Lys Gly Ser Asp Met Met Tyr Asn Glu Phe		
305	310	315
Asp Tyr Asp Leu Cys Asn Glu Val Val Asp Val Thr Cys Ser Pro		
320	325	330
Lys Pro Asp Ala Phe Asn Pro Cys Glu Asp Ile Met Gly Tyr Asn		
335	340	345
Ile Leu Arg		

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tggtgccct 59

<210> 10
<211> 47
<212> DNA
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<400> 10
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<210> 11
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<400> 11
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Glu Leu Ser Gly Ser Arg Cys Pro Glu Pro
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<400> 13
Pro Arg Ala Gly Leu Ala Arg Leu Ser Leu
1 5 10

<210> 14
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<212> PRT
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<400> 14
Leu Asn Glu Val Val Lys Ile Glu Ile Ser
1 5 10

<210> 15

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<220>
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Ser Glu Leu Leu Ile Gln Asn Thr Lys Asn
1 5 10

<210> 16
<211> 10
<212> PRT
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<220>
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<400> 16
Met Asn Asn Glu Ser Val Thr Leu Lys Leu
1 5 10

<210> 17
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<220>
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<400> 17
Thr Leu Thr Tyr Pro Ser His Cys Cys Ala
1 5 10

<210> 18
<211> 10
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<220>
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<400> 18
Val Leu Ile Trp Leu Ile Asn Ile Leu Ala
1 5 10

<210> 19
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<220>
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<400> 19
Val Phe Ala Ser Glu Leu Ser Val Tyr Thr
1 5 10

<210> 20
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<212> PRT
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<400> 20
Ala Ile Leu Ile Phe Thr Asp Phe Thr Cys
1 5 10

<210> 21
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<220>
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<400> 21
Phe Thr Lys Ala Phe Gln Arg Asp Phe Leu
1 5 10

<210> 22
<211> 10
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<213> Artificial Sequence

<220>
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<400> 22
Arg Ala Glu Leu Tyr Arg Arg Lys Glu Phe
1 .5 10